

REMARKS

Submitted herewith is a certified copy of the corresponding Japanese patent application (JP 2001-037856, filed February 15, 2001). An indication that this document has been safely received would be appreciated.

The Examiner required a substitute specification having more discernable writing. A substitute specification which contains no new matter accompanies this Reply. No marked-up copy of the substitute specification is included because no changes have been made to the specification.

The Applicants request reconsideration of the rejection.

Claims 1, 4-9, and 12-27 are pending.

Claims 1-4, 7-12, and 15-17 were rejected under 35 U.S.C. § 102(b) as being clearly anticipated by Burns U.S. Patent No. 5,757,001 (Burns).

The invention is directed to a method and apparatus for paper material discrimination, in which light beams of two different wavelengths are transmitted to a paper under consideration and absorbances at the two wavelengths are obtained. An absorbance difference between the obtained absorbances is calculated, and the paper material of the paper is discriminated based on the calculated absorbance difference. According to a preferred feature now set forth in each of the independent claims, the wavelengths are limited to

respective ranges of ± 30 nm around 1480 nm and 2100 nm as centers.

These two wavelengths are preferred by the inventors based on knowledge obtained by experimental activity. Particularly, it has been found that absorption intensity differences at wavelengths near 1480 nm and 2100 nm change in accordance with the content of amylose (containing amylopectin) in cellulose in the paper. See, for example, the specification at page 8, lines 10-17.

On the other hand, Burns discloses a method of detecting counterfeit currency in which absorbances are measured for various wavelengths and compared against absorbance standards, with the difference between the measured absorbances and the absorbance standards used as an indication of counterfeit or true currency. Thus, the absorbance difference set forth in the claims is substantively different from the absorbance differences measured by Burns.

Furthermore, although the Examiner notes that Burns teaches to use a wavelength center at 1452 nm for analyzing moisture content of the paper, and at 2100 nm for analyzing oils from human contact, these "factors" are considered useful in addition to absorbances based on paper content of various bill denominations (column 9, lines 42-54). In fact, as expressly taught by Burns, "The more wavelengths used in the

generation of the data to be compared when making determinations of whether currency is counterfeit or not, the more accurate the determinations will be." Thus Burns does not teach a method or apparatus in which a paper material is discriminated from a calculated absorbance difference based on a stored correspondence between paper materials and absorbance differences, using two wavelengths of 1480 nm and 2100 nm (± 30 nm). Accordingly, each of the independent claims and its respective dependent claims patentably define over Burns.

New claims 22-27 provide separately patentable features of detecting amylose content in cellulose in the paper material (claims 22, 24, and 26) and discriminating the paper material based on the content of amylose in cellulose in the paper material in accordance with a difference between absorption intensities at the wavelengths with respect to the paper material. As noted above, Burns adds the measurement of absorbances at 1452 nm and 2100 nm to analyze, respectively, the content of moisture and oil of human contact. The difference in purpose is significant because the present invention, operating at the claimed wavelengths, discriminates the paper material without influence of humidity or paper material deterioration (page 3, lines 6-9; page 8, lines 18-27).



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Claims 5, 6, 13, 14, and 18-21 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Burns.

These rejected claims patentably define over Burns in accordance with the distinctions noted above.

In view of the foregoing remarks and amendments, Applicants request reconsideration of the rejection and allowance of the claims.

Respectfully submitted,


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